

SEQUENCE LISTING

<110> Belmont, John
 Fletcher, Frederick
 Chen, Alice
 Jurecic, Roland
 Colicos, Suzanne
 Tan, Tse-Hua
 Zhou, Guisheng

<120> Phosphatases Which Activate Map Kinase Pathways

<130> 99-383-B

<140> US 09/665,819

<141> 2000-09-20

<150> US 60/155,068

<151> 1999-09-21

<160> 27

<170> PatentIn version 3.0

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<212> DNA

<213> Homo sapiens

<220>

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<222> (181)..(795)

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cat att ctg tct gtc cat gat agt gcc agg cct atg ttg gag gga gtt      324
His Ile Leu Ser Val His Asp Ser Ala Arg Pro Met Leu Glu Gly Val
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Phe Lys Asp Ala Arg Asp Ala Glu Gln Leu Ser Lys Asn Lys Val Thr
 20 25 30

His Ile Leu Ser Val His Asp Ser Ala Arg Pro Met Leu Glu Gly Val
 35 40 45

Lys Tyr Leu Cys Ile Pro Ala Ala Asp Ser Pro Ser Gln Asn Leu Thr
 50 55 60

Arg His Phe Lys Glu Ser Ile Lys Phe Ile His Glu Cys Arg Leu Arg
 65 70 75 80

Gly Glu Ser Cys Leu Val His Cys Leu Ala Gly Val Ser Arg Ser Val
 85 90 95

Thr Leu Val Ile Ala Tyr Ile Met Thr Val Thr Asp Phe Gly Trp Glu
 100 105 110

Asp Ala Leu His Thr Val Arg Ala Gly Arg Ser Cys Ala Asn Pro Asn
 115 120 125

Val Gly Phe Gln Arg Gln Leu Gln Glu Phe Glu Lys His Glu Val His
 130 135 140

Gln Tyr Arg Gln Trp Leu Lys Glu Glu Tyr Gly Glu Ser Pro Leu Gln
 145 150 155 160

Asp Ala Glu Glu Ala Lys Asn Ile Leu Gly Lys Tyr Lys Glu Gln Gly
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Arg Thr Glu Pro Gln Pro Gly Ala Arg Arg Trp Ser Ser Phe Pro Ala
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<210> 3
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<220>

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<222> (15)..(629)

<223> n is a, t, c, or g

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195

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 <213> Mus musculus

<400> 4

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Phe Lys Asp Ala Arg Asp Ala Glu Gln Leu Ser Arg Asn Lys Val Thr
 20 25 30

His Ile Leu Ser Val His Asp Thr Ala Arg Pro Met Leu Glu Gly Val
 35 40 45

Lys Tyr Leu Cys Ile Pro Ala Ala Asp Thr Pro Ser Gln Asn Leu Thr
 50 55 60

Arg His Phe Lys Glu Ser Ile Lys Phe Ile His Glu Cys Arg Leu Gln
 65 70 75 80

Gly Glu Ser Cys Leu Val His Cys Leu Ala Gly Val Ser Arg Ser Val
 85 90 95

Thr Leu Val Ile Ala Tyr Ile Thr Thr Val Thr Asp Phe Gly Trp Glu
100 105 110

Asp Ala Leu His Thr Val Arg Ala Gly Arg Ser Cys Ala Asn Pro Asn
115 120 125

Leu Gly Phe Gln Arg Gln Pro Gln Glu Phe Glu Lys His Glu Val His
130 135 140

Gln Tyr Arg Gln Trp Leu Arg Glu Glu Tyr Gly Glu Asn Pro Leu Arg
145 150 155 160

Asp Ala Glu Glu Ala Lys Asn Ile Leu Gly Lys Tyr Lys Glu Gln Gly
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Arg Met Glu Pro Arg Pro Ser Ser Arg Arg Trp Ser Ser Phe Ser Thr
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Leu Pro Pro Leu Thr Tyr Asn Asn Tyr Thr Thr Glu Thr
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<212> PRT
<213> Artificial

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Arg Asp Ala Glu Gln Leu Ser Arg Asn Lys Val Thr His Ile Leu Ser
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Val His Asp Thr Ala Arg Pro Met Leu Glu Gly Val Lys Tyr Leu Cys
35 40 45

Ile Pro Ala Ala Asp Thr Pro Ser Gln Asn Leu Thr Arg His Phe Lys
50 55 60

Glu Ser Ile Lys Phe Ile His Glu Cys Arg Leu Gln Gly Glu Ser Cys
65 70 75 80

Leu Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr Leu Val Ile
85 90 95

Ala Tyr Ile Thr Thr Val Thr Asp Phe Gly Trp Glu Asp Ala Leu His
100 105 110

Thr Val Arg Ala Gly Arg Ser Cys Ala Asn Pro Asn Leu Gly Phe Gln
115 120 125

Arg Gln Pro Gln Glu Phe Glu Lys His Glu
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<210> 6
<211> 137
<212> PRT
<213> Artificial

<220>
<223> Description of Artificial sequence: puckered

<400> 6

Ala Ser Pro Val Phe Pro His Leu Leu Leu Gly Asn Gly Arg Asp Ala
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Asp Asn Pro Ser Ser Val Gly Ala Asn Cys Val Leu Asn Val Thr Cys
20 25 30

Gln Ser Pro Asn Glu Ser His Leu Gln Gly Leu Lys Tyr Met Gln Ile
35 40 45

Pro Ala Ser Asp Thr Pro His Gln Asn Ile Lys Gln Tyr Phe Gln Glu
50 55 60

Ala Tyr Asp Phe Ile Glu Asp Ala Arg Lys Thr Gly Ser Arg Val Leu
65 70 75 80

Leu His Cys His Ala Gly Ile Ser Arg Ser Ala Thr Ile Ala Ile Ala
85 90 95

Tyr Val Met Arg Tyr Lys Ser Leu Ser Leu Leu Glu Ala Tyr Lys Leu
100 105 110

Val Lys Val Ala Arg Pro Ile Ile Ser Pro Asn Leu Asn Phe Met Gly
115 120 125

Gln Leu Leu Glu Leu Glu Gln Asn Leu
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<212> PRT
<213> Artificial

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<223> Description of Artificial Sequence: rMKP-3

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 Thr Asn Leu Asp Val Leu Glu Glu Phe Gly Ile Lys Tyr Ile Leu Asn
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 Val Thr Pro Asn Leu Pro Asn Leu Phe Glu Asn Ala Gly Glu Phe Lys
 35 40 45
 Tyr Lys Gln Ile Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln
 50 55 60
 Phe Phe Pro Glu Ala Ile Ser Phe Ile Asp Glu Ala Arg Gly Lys Asn
 65 70 75 80
 Cys Gly Val Leu Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr
 85 90 95
 Val Thr Val Ala Tyr Leu Met Gln Lys Leu Asn Leu Ser Met Asn Asp
 100 105 110
 Ala Tyr Asp Ile Val Lys Met Lys Lys Ser Asn Ile Ser Pro Asn Phe
 115 120 125
 Asn Phe Met Gly Gln Leu Leu Asp Phe Glu Arg Thr Leu
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<210> 8
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 <212> PRT
 <213> Artificial

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 <223> Description of Artificial Sequence: rMKP-X

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 Thr Asn Leu Asp Val Leu Gly Lys Tyr Gly Ile Lys Tyr Ile Leu Asn
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 Val Thr Pro Asn Leu Pro Asn Ala Phe Glu His Gly Gly Glu Phe Thr
 35 40 45
 Tyr Lys Gln Ile Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Gln
 50 55 60
 Phe Phe Pro Glu Ala Ile Ser Phe Ile Asp Glu Ala Arg Ser Lys Lys
 65 70 75 80
 Cys Gly Val Leu Val His Cys Leu Ala Gly Ile Ser Arg Ser Val Thr
 85 90 95
 Val Thr Val Ala Tyr Leu Met Gln Lys Met Asn Leu Ser Leu Asn Asp
 100 105 110

Ala Tyr Asp Phe Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe
 115 120 125

Asn Phe Met Gly Gln Leu Leu Asp Phe Glu Arg Thr Leu
 130 135 140

<210> 9
 <211> 141
 <212> PRT
 <213> Artificial

<220>
 <223> Description of Artificial Sequence: hMKP-4

<400> 9

Pro Val Gln Ile Leu Pro Asn Leu Tyr Leu Gly Ser Ala Arg Asp Ser
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Ala Asn Leu Glu Ser Leu Ala Lys Leu Gly Ile Arg Tyr Ile Leu Asn
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Val Thr Pro Asn Leu Pro Asn Phe Phe Glu Lys Asn Gly Asp Phe His
 35 40 45

Tyr Lys Gln Ile Pro Ile Ser Asp His Trp Ser Gln Asn Leu Ser Arg
 50 55 60

Phe Phe Pro Glu Ala Ile Glu Phe Ile Asp Glu Ala Leu Ser Gln Asn
 65 70 75 80

Cys Gly Val Leu Val His Cys Leu Ala Gly Val Ser Arg Ser Val Thr
 85 90 95

Val Thr Val Ala Tyr Leu Met Gln Lys Leu His Leu Ser Leu Asn Asp
 100 105 110

Ala Tyr Asp Leu Val Lys Arg Lys Lys Ser Asn Ile Ser Pro Asn Phe
 115 120 125

Asn Phe Met Gly Gln Leu Leu Asp Phe Glu Arg Ser Leu
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<210> 10
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 <212> PRT
 <213> Artificial

<220>
 <223> Description of Artificial Sequence: rMKP-2

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Ala Arg Arg Asp Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Leu Asn
20 25 30

Val Ser Ser Asp Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys
35 40 45

Cys Ile Pro Val Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe
50 55 60

Met Glu Ala Ile Glu Tyr Ile Asp Ala Val Lys Asp Cys Arg Gly Arg
65 70 75 80

Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys
85 90 95

Leu Ala Tyr Leu Met Met Lys Lys Arg Val Arg Leu Glu Glu Ala Phe
100 105 110

Glu Phe Val Lys Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe
115 120 125

Met Gly Gln Leu Leu Gln Phe Glu Ser Gln Val
130 135

<210> 11
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<212> PRT
<213> Artificial

<220>
<223> Description of Artificial Sequence: mMKP-1

<400> 11

Pro Val Glu Ile Leu Ser Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala
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Ser Arg Lys Asp Met Leu Asp Ala Leu Gly Ile Thr Ala Leu Ile Asn
20 25 30

Val Ser Ala Asn Cys Pro Asn His Phe Glu Gly His Tyr Gln Tyr Lys
35 40 45

Ser Ile Pro Val Glu Asp Asn His Lys Ala Asp Ile Ser Ser Trp Phe
50 55 60

Asn Glu Ala Ile Asp Phe Ile Asp Ser Ile Lys Asp Ala Gly Gly Arg
65 70 75 80

Val Phe Val His Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys
85 90 95

Leu Ala Tyr Leu Met Arg Thr Asn Arg Val Lys Leu Asp Glu Ala Phe
100 105 110

Glu Phe Val Lys Gln Arg Arg Ser Ile Ile Ser Pro Asn Phe Ser Phe
115 120 125

Met Gly Gln Leu Leu Gln Phe Glu Ser Gln Val
 130 135

<210> 12
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 <212> PRT
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<220>
 <223> Description of Artificial Sequence: MH3/6

<400> 12

Leu Thr Arg Ile Leu Pro His Leu Tyr Leu Gly Ser Gln Lys Asp Val
 1 5 10 15

Leu Asn Lys Asp Leu Met Thr Gln Asn Gly Ile Ser Tyr Val Leu Asn
 20 25 30

Ala Ser Asn Ser Cys Pro Lys Pro Asp Phe Ile Cys Glu Ser Arg Phe
 35 40 45

Met Arg Ile Pro Ile Asn Asp Asn Tyr Cys Glu Lys Leu Leu Pro Trp
 50 55 60

Leu Asp Lys Ser Ile Glu Phe Ile Asp Lys Ala Lys Leu Ser Ser Cys
 65 70 75 80

Gln Val Ile Val His Cys Leu Ala Gly Ile Ser Arg Ser Ala Thr Ile
 85 90 95

Ala Ile Ala Tyr Ile Met Lys Thr Met Gly Met Ser Ser Asp Asp Ala
 100 105 110

Tyr Arg Phe Val Lys Asp Arg Arg Pro Ser Ile Ser Pro Asn Phe Asn
 115 120 125

Phe Leu Gly Gln Leu Leu Glu Tyr Glu Arg Ser Leu
 130 135 140

<210> 13
 <211> 139
 <212> PRT
 <213> Artificial

<220>
 <223> Description of Artificial Sequence: mPAC-1

<400> 13

Pro Val Glu Ile Leu Pro Tyr Leu Tyr Leu Gly Ser Cys Asn His Ser
 1 5 10 15

Ser Asp Leu Gln Gly Leu Gln Ala Cys Gly Ile Thr Ala Val Leu Asn
 20 25 30

Val Ser Ala Ser Cys Pro Asn His Phe Glu Gly Leu Phe His Tyr Lys
 35 40 45

Ser Ile Pro Val Glu Asp Asn Gln Met Val Glu Ile Ser Ala Trp Phe
 50 55 60

Gln Glu Ala Ile Ser Phe Ile Asp Ser Val Lys Asn Ser Gly Gly Arg
 65 70 75 80

Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Ala Thr Ile Cys
 85 90 95

Leu Ala Tyr Leu Ile Gln Ser His Arg Val Arg Leu Asp Glu Ala Phe
 100 105 110

Asp Phe Val Lys Gln Arg Arg Gly Val Ile Ser Pro Asn Phe Ser Phe
 115 120 125

Met Gly Gln Leu Leu Gln Leu Glu Thr Gln Val
 130 135

<210> 14
 <211> 139
 <212> PRT
 <213> Artificial

<220>
 <223> Description of Artificial Sequence: hVH3
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Pro Val Glu Ile Leu Pro Phe Leu Tyr Leu Gly Ser Ala Tyr His Ala
 1 5 10 15

Ser Lys Cys Glu Phe Leu Ala Asn Leu His Ile Thr Ala Leu Leu Asn
 20 25 30

Val Ser Arg Arg Thr Ser Glu Ala Cys Met Thr His Leu His Tyr Lys
 35 40 45

Trp Ile Pro Val Glu Asp Ser His Thr Ala Asp Ile Ser Ser His Phe
 50 55 60

Gln Glu Ala Ile Asp Phe Ile Asp Cys Val Arg Glu Lys Gly Gly Lys
 65 70 75 80

Val Leu Val His Cys Glu Ala Gly Ile Ser Arg Ser Pro Thr Ile Cys
 85 90 95

Met Ala Tyr Leu Met Lys Thr Lys Gln Phe Arg Leu Lys Glu Ala Phe
 100 105 110

Asp Tyr Ile Lys Gln Arg Arg Ser Met Val Ser Pro Asn Phe Gly Phe
 115 120 125

Met Gly Gln Leu Leu Gln Tyr Glu Ser Glu Ile
 130 135

<210> 15
 <211> 139
 <212> PRT
 <213> Artificial

<220>

<223> Description of Artificial Sequence: hVHR

<400> 15

Val Gly Asn Ala Ser Val Ala Gln Asp Ile Pro Lys Leu Gln Lys Leu
 1 5 10 15

Gly Ile Thr His Val Leu Asn Ala Ala Glu Gly Arg Ser Phe Met His
 20 25 30

Val Asn Thr Asn Ala Asn Phe Tyr Lys Asp Ser Gly Ile Thr Tyr Leu
 35 40 45

Gly Ile Lys Ala Asn Asp Thr Gln Glu Phe Asn Leu Ser Ala Tyr Phe
 50 55 60

Glu Arg Ala Ala Asp Phe Ile Asp Gln Ala Leu Ala Gln Lys Asn Gly
 65 70 75 80

Arg Val Leu Val His Cys Arg Glu Gly Tyr Ser Arg Ser Pro Thr Leu
 85 90 95

Val Ile Ala Tyr Leu Met Met Arg Gln Lys Met Asp Val Lys Ser Ala
 100 105 110

Leu Ser Ile Val Arg Gln Asn Arg Glu Ile Gly Pro Asn Asp Gly Phe
 115 120 125

Leu Ala Gln Leu Cys Gln Leu Asn Asp Arg Leu
 130 135

<210> 16
 <211> 12
 <212> PRT
 <213> Artificial

<220>

<223> Description of Artificial Sequence: consensus sequence

<400> 16

Ile Leu Pro Phe Leu Tyr Leu Gly Ser Ala Lys Asp
 1 5 10

<210> 17
 <211> 5
 <212> PRT
 <213> Artificial

<220>

<223> Description of Artificial Sequence: consensus sequence

<400> 17

Ile Leu Asn Val Thr
1 5

<210> 18

<211> 4

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: consensus sequence

<400> 18

Phe Lys Tyr Lys
1

<210> 19

<211> 7

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: consensus sequence

<400> 19

Asp Ala Tyr Asp Phe Val Lys
1 5

<210> 20

<211> 4

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: consensus sequence

<400> 20

Gln Leu Leu Ile
1

<210> 21

<211> 32

<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: oligonucleotide 1065-30

<400> 21

cctttttgag caagttcagc ctggttaagt cc

32

<210> 22
<211> 34
<212> DNA
<213> Artificial

<220>

<223> Description of Artificial Sequence: oligonucleotide 1386-58

<400> 22

ggaggcctct ctctgtgtgt gtggagccct cagg

34

<210> 23
<211> 31
<212> DNA
<213> Artificial

<220>

<223> Description of Artificial Sequence: oligonucleotide 1386-59

<400> 23

ggcagcacca gcctgaactt tgcaatattt c

31

<210> 24
<211> 19
<212> DNA
<213> Artificial

<220>

<223> Description of Artificial Sequence: oligonucleotide 1470-25

<400> 24

cagcagcgga ttcaccatc

19

<210> 25
<211> 19
<212> DNA
<213> Artificial

<220>

<223> Description of Artificial Sequence: oligonucleotide 1470-26

<400> 25

gcgatcacca gtgtcacgc

19

<210> 26
<211> 14
<212> PRT
<213> Homo sapiens

<400> 26

Cys Gly Asn Phe Lys Asp Ala Arg Asp Ala Glu Gln Leu Ser

1 5 10

<210> 27
<211> 18
<212> PRT
<213> Artificial

<220>

<223> Description of Artificial Sequence: peptide for preparation of polyclonal antibodies

<400> 27

Cys Lys Asn Gly Val Ile Arg Gly Gln Pro Ser Pro Leu Ala Gln Val
1 5 10 15

Gln Gln